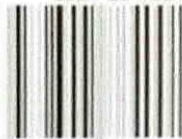


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# COAL POWERED INDIA

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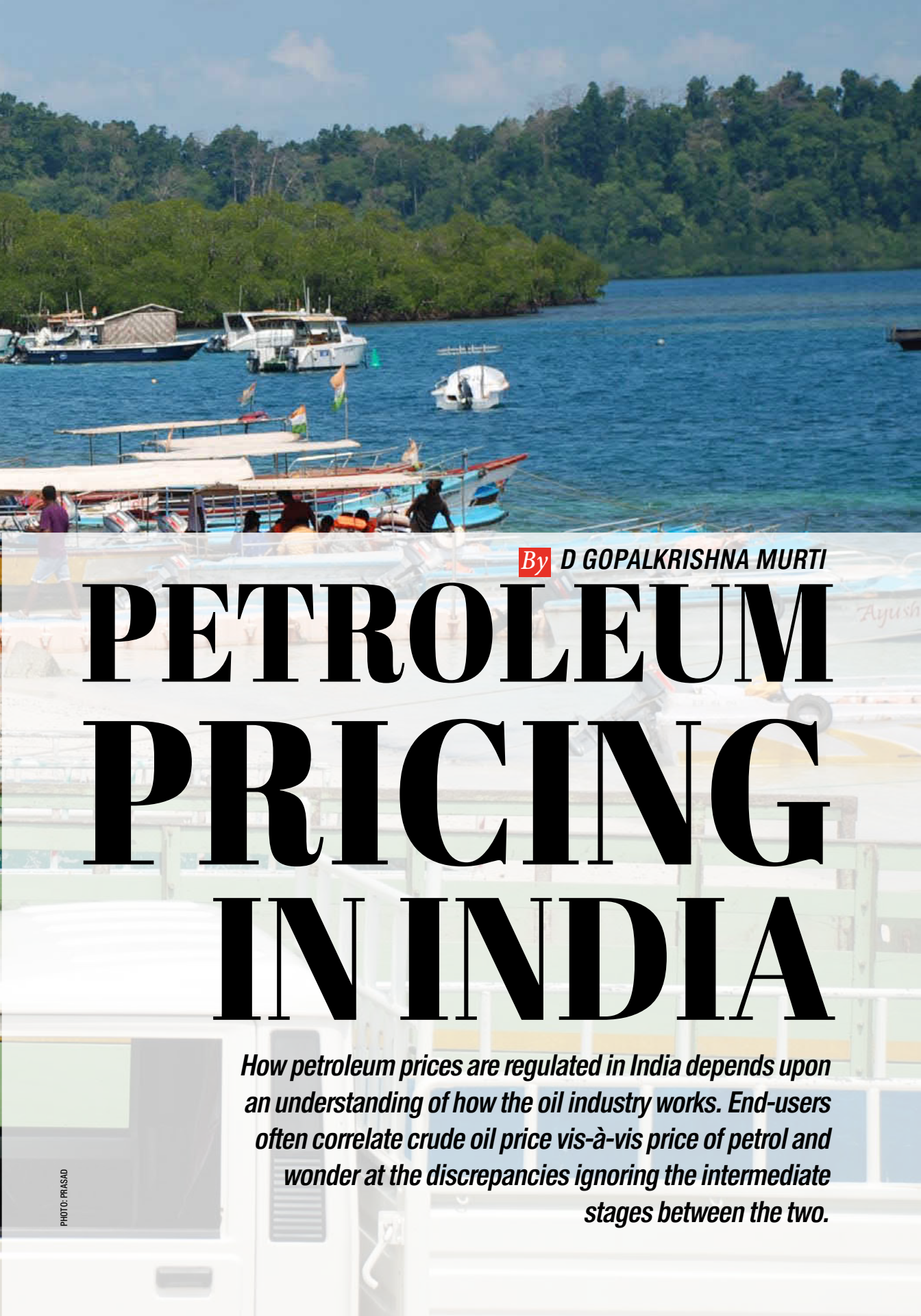


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## FUELING TRANSPORT



Petroleum products are routinely transported by ships to distant locations to help develop the economy—Port Blair harbour, Andaman and Nicobar Islands.



By **D GOPALKRISHNA MURTI**

# PETROLEUM PRICING IN INDIA

*How petroleum prices are regulated in India depends upon an understanding of how the oil industry works. End-users often correlate crude oil price vis-à-vis price of petrol and wonder at the discrepancies ignoring the intermediate stages between the two.*

## Basics of petroleum production

Does a barrel of crude oil yield a barrel of gasoline? We, as end-users, tend to correlate the price of crude oil with the price of gasoline alone and wonder why the government is not reducing the price of gasoline when international crude pricing is at a historic low.

A familiarity with the international measuring unit and the Indian unit is needed to have a better understanding of pricing. Barrel is an international unit for trading in crude oil by volume. In earlier times, crude oil was packed and transported in barrels or drums. An oil barrel consists of 42 US gallons—42 x 3.785418, or 158.987 litres. In India, we generally use cubic meters—one cubic meter would be roughly 6.25 barrels.

Similarly, the international unit for the refining capacity is barrels per day (BPD), while in India, we use metric tonne per year (MTY). One MTY represents approximately 20,000 BPD of refining capacity, assuming an average crude specific gravity of 0.861. BPD is the more scientifically accepted unit.

A typical yield from crude oil (Fig. 1) shows a large variation in yield of various petroleum products depending on the sources of crude oil. Some crude oils (known as light crude oils) produce large amounts of gasoline while heavier crudes tend to produce more of heavier products like asphalt and bitumen. Since the 1970s, technologies are in place to crack heavy crude oils to produce lighter components through refinery processes. Some of the secondary units such as cracking unit reformers are comparatively recent (1970s) developments. These units improve the yield of high-value products and add to refinery profit margins.

It is essential that crude oil producers get a fair price and the end-users pay a fair price as well. Crude oil exploration and development are capital intensive projects. Companies may spend billions of dollars only to find that the oil reserves are not enough for commercial production. This is despite tremendous developments in exploration technologies. Such investments go waste and oil companies need to account for such losses. As the hydrocarbon reservoirs grow old, the pressures and flow rates diminish and water production increases. A well which starts production with 90 per cent of oil and 10 per cent of water may end up in reverse with 10 per cent oil and 90 per cent water before it is shut for good. To retain the oil wells' productivity, enhanced oil recovery methods are needed, which

in turn make the production expensive. Therefore, continuous investments in locating new hydrocarbon reservoirs are necessary. This is also true for all mineral resources found on earth.

## Historical crude oil pricing

Crude oils can essentially be divided into three types for pricing purposes:

- ◆ Light and sweet—giving the best yield of high value products like gasoline and LPG;
- ◆ Heavy crudes, which have more of heavier components like bitumen and asphalt, and
- ◆ Sour crudes having higher component of sulphur. The last two varieties require additional processing. Sour crudes with high sulphur component are harsh on the refinery equipment in terms of service life due to corrosion issues.

Crude oil pricing corresponds to its quality—light and sweet crudes commanding the maximum premium. On an average, a sour crude could be cheaper by 4 to 6 USD per barrel than a lighter crude. However, the benefits of lower initial pricing of sour crude is lost in higher processing costs requiring strict environmental emission controls.

Figure 2A shows historical crude oil prices for a typical crude oil (West Texas Intermediate) for which data are readily available since 1946. These data are updated on hourly basis and available at [www.macrotrends.net](http://www.macrotrends.net). Figure 2A also shows crude oil price adjusted to inflation and the recession periods. It is seen that the crude oil prices generally fluctuate with inflation; or perhaps vice versa. Figure 2B is interesting. It shows how many barrels of crude oil we could buy with an ounce of gold at a given time. It should give us some consolation that in the year 1946, we could buy 30 barrels of crude oil with an ounce of gold and now in 2017 we can buy around 27.5 barrels. Not a big change—it is a less than 10 per cent increase in price in the last 70 years vis-à-vis gold price.

## Price Components for Gasoline reaching the Motorists

So far, we talked about crude oil prices. Let us see how it affects gasoline pricing, the most popular petroleum product, but the most vulnerable too. Figure 3 explains the basics of pricing components added to gasoline by the time it reaches the motorists. Multiple pricing components are involved and an attempt is made to show the latest pricing wherever available. It can be seen that seven to

eight components are involved in gasoline pricing. The price typically triples by the time crude oil is converted to a finished product for the end-user. From the cost break-down, it is clear that the refinery processing fees are meagre.

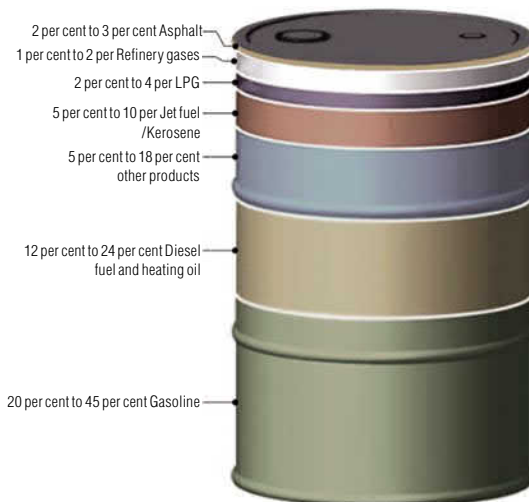
## Price subsidies in India

Fossil fuel subsidies were 5 trillion USD in 2015 according to the International Monetary Fund. Unfortunately, the world's largest energy subsidisers are also the largest energy consumers, led by China and the United States, which together accounted for a 3 trillion USD subsidy in 2015, followed by India, the European Union, Russia and Japan.

The Indian government historically subsidised petroleum prices from 1947 till June 2010 with the objective of protecting consumers from international price volatility and providing energy access for its citizens, especially the poor. However, energy subsidies placed a heavy burden on government budgets, while often failing to reach their targeted beneficiaries. The subsidies were within reasonable limits when the crude prices were low, say up to 20 USD per barrel. Although the price went up seven times to 140 USD per barrel, we never saw a proportionate price jump in gasoline pricing. It was because the government and the oil companies absorbed the heavy losses. From June 2010, petrol prices were freed from government control and diesel pricing was freed in October 2014.

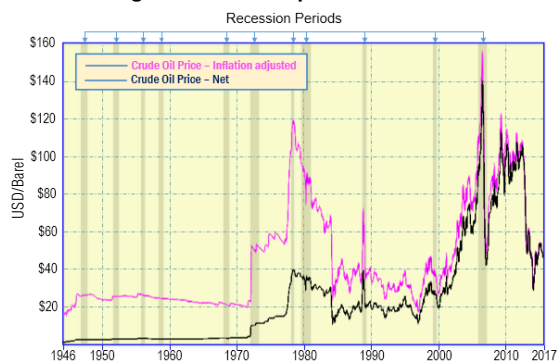
Out of major petroleum products consumed by general public, only LPG and kerosene are controlled and subsidised by the government. All other petroleum products' prices are linked to crude oil pricing in the international markets. From June 16, 2017, the government allowed gasoline and diesel prices to fluctuate daily instead of the earlier practice of once every fortnight across the country (Hindustan Times, June 16, 2017). This has been done to enable oil companies to align domestic rates more closely with global pricing. The daily changes would eliminate irregularities arising from the speculative inventory management by petrol pump dealers on the expectations of price revisions. The consumer will benefit too as variations will be limited to a few paise, softening the blow that came with steeper current fortnightly adjustments. The daily revision should prove as win-win situation for producers and consumers both. Incidentally, the daily adjustment model is followed in several

**Fig. 1: Typical Yield from Crude Oil (% Range)**



*Yield of various petroleum products depends upon the sources of crude oil. Gasoline yields range from 20 to 45 per cent when the crude oil is of light variety.*

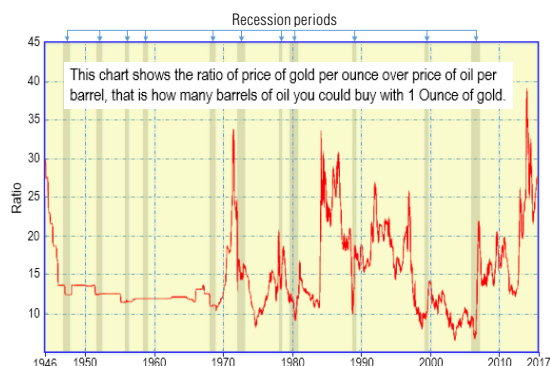
**Fig. 2A: Crude oil prices : 1950-2016**



*Inflation and prices of crude oil are interconnected and fluctuate in agreement with each other.*

Source: Data by Macrotrends.net

**Fig. 2B: Gold price to crude oil price**



*Over the years, the ratio between barrels of oil one could buy with one ounce of gold has not changed much.*

Source: Data by Macrotrends.net

countries in Europe and in North America.

Figure 3 shows India's crude oil production and consumption since 1965. The gap between production and consumption is filled by imports. It is seen that the import of crude oil is continuously rising. In mid 1960s, India produced one third of its net consumption and now the ratio is less than one fifth. The gap between consumption and indigenous production is widening and is an alarming situation. Imagine the situation in 2050? With ever increasing population, the net availability of petroleum products per capita would be minimal. For example Kuwait with an indigenous population of 1 million citizens produces 2.5 million barrels a day of crude oil. In comparison, India with a population of 1.2 billion produces 800,000 barrels a day. The per capita crude production in Kuwait is 2.5 barrels a day, it is 0.000667 barrel a day in India which is 3,750 times lower than Kuwait. India's meagre crude oil reserves (5.7 thousand million barrels) is just 0.3 per cent of world reserves (BP Statistical Review of World Energy report, June 2016), while we have 17.9 per cent of world population.

The country exported petroleum products worth 27.7 billion USD in 2016, about 10.6 per cent of total exports (Workman, 2017). Although the country is hugely dependent on oil imports, export of oil-based products has supported the economy

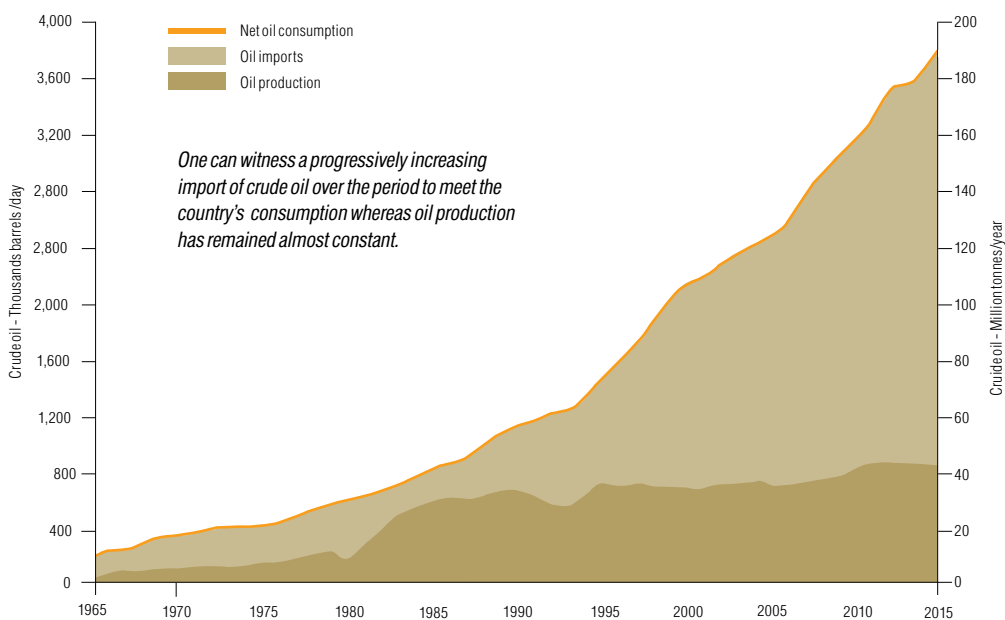
to a large extent. This is similar to how we export high-quality Basmati rice and import lower quality rice to feed the masses. Exporting finished products makes sense as India currently has excess refining capacity. The current refining capacity is 232 MTY while the demand was 194.2 MTY in the fiscal year 2016-17. The domestic oil demand is projected to climb to 500 MTY by 2040. The government is, therefore, carrying out refinery expansions and building new refineries.

### Price control and consumption

The Indian government controls the prices by an indirect method of tinkering with excise duties, special duties and the educational cess on petroleum products. This is basically an exercise to generate revenues, to control the petroleum consumption and to control the fiscal deficit. Similar action is taken by the state governments by regulating the value added tax VAT.

The answer to the widely asked question, why government does not lower the gasoline prices while crude is selling at historically low prices, can be best answered by the following: let us assume you have inherited a big loan and you recently got a huge bonus at your workplace. Would you want to spend all of the bonus immediately or use part of the bonus to pay some of the loan? Would you not consider it prudent to pay a part of the loan in

**Fig. 3: India 1965-2015 production versus consumption**



Source: BP Statistical Review of World Energy June 2016.

good times so that you will have the flexibility to take more loans during adverse times? This is what the government is doing now.

Government had huge past debts due to unrealistic fuel subsidies. Now that the oil prices are low, it is time to pay a part of that debt. Playing with the duties and taxes is useful for multiple reasons which are as follows:

- ◆ The increase in taxes on petroleum products acts as a safety valve and provides a cushion. The effect of this is that it becomes a transfer from the state treasuries of the oil producers to the treasury of India. When the oil prices increase again, the government can first cut the excise duty prior to increasing the price at the pump. This is what the government did in the previous years of price increases.
- ◆ If the international crude oil prices go up too fast, the pricing in India cannot be controlled by a cut in the taxes to relieve the consumers. In such a scenario, the government can bring back some of the subsidies. To have that option open, it has to keep its current deficit much lower.
- ◆ The government does not want the people to get really wasteful in using petroleum products. People tend to abuse things when it is cheap. At the end of the day, cheap oil causes excess pollution. In the 80s and 90s when oil prices were down, Americans went on for a car buying spree,

## **Seven to eight components are involved in the production of gasoline which has a bearing upon its pricing.**

producing bigger and bigger monster vehicles that messed up the environment even more. In contrast, the Scandinavian countries have the most expensive gas throughout resulting in the most energy efficient and least polluted vehicular environs.

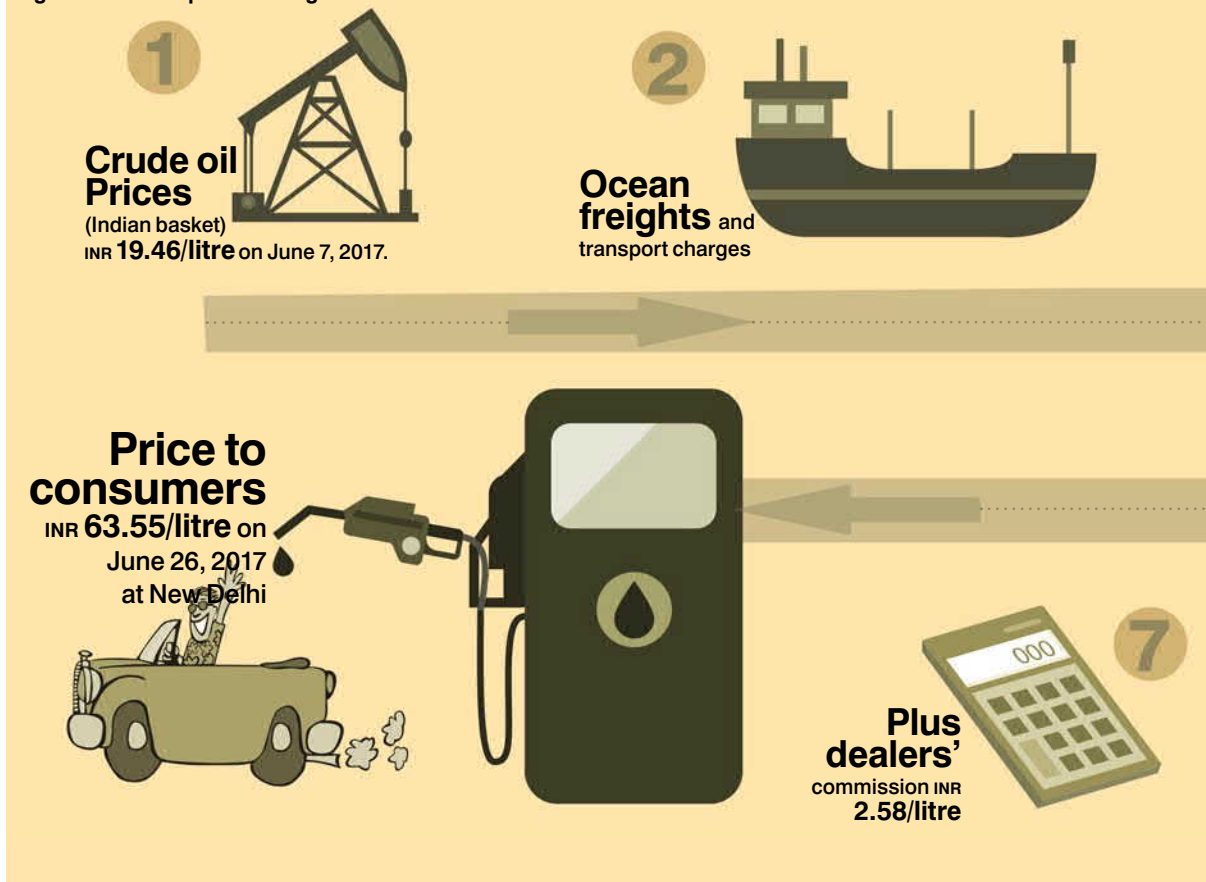
- ◆ And it is not just India that is increasing the fuel taxes. Many other smart countries are doing the same too. Australia did the same a couple of months ago. The US is mulling over the same now.

There are some aspects of the policy that are specific to India. The country spends around 23 billion USD a year on subsidising the use of petrol and diesel (Worstell, 2014). Subsidisation is not a sensible use of tax expenditures at all. It is most



Kochi LNG is a liquefied natural gas regasification terminal in Puthuvype, Kochi, India.

Fig. 4: Price components of gasoline in India



certainly not pro-poor. For example, in India the real poor have no or very little access to mechanisation of any kind. Therefore, the cheap fuel does not benefit them. It all ends up being a subsidy to the middle and upper classes and they are rich enough to be part of an unsubsidised mechanised economy.

The average retail sale price of gasoline around the world is approximately 1.02 USD/litre. The Indian retail price is equivalent to 1.05 USD/litre as on July 10, 2017 (globalpetrolprices.com). It can thus be seen that Indian pricing is fairly close to international pricing.

### GST imposition

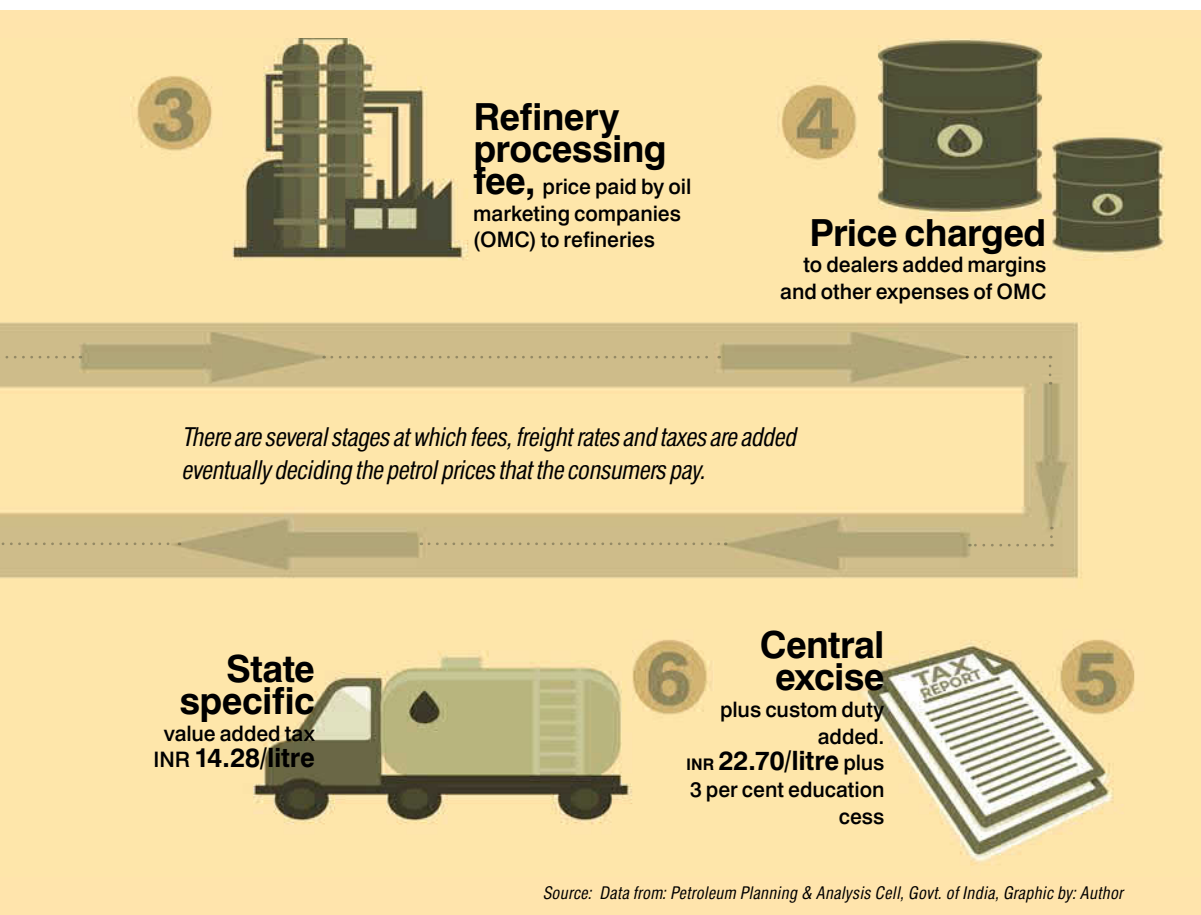
As of July 1, 2017, the Indian government replaced various levels of taxation and duties to a single entity, i.e. Goods and Services Tax popularly known as GST. The idea is to bring price uniformity and simplify tax collection across India. The petroleum products are out of this regime at the moment and continue with the existing pricing structure.

Eventually, the government may bring petro-

leum products under the GST regime. However, it is not expected to bring any radical change to the final selling price of petrol at petrol-pump outlets. Overall pricing will continue to be governed by the criteria discussed earlier.

The government may collect the GST as a specific percentage of the base price and distribute the tax proceeds internally to the parties at stake. For example, the cost components of stage 1, 2, 3 and 4 may be clubbed as the base price, whereas tax/overhead components at stage 5, 6 and 7 may be clubbed as GST (Fig. 4).

There could be other ways of calculations. It may, however, be concluded that the overall pricing to the consumer will not alter and stay at par with the prevailing international pricing. As discussed earlier, the government may absorb part of a steep hike if crude oil prices shoot abnormally high, say above 100 USD/barrel. Likewise, the government may keep part of the windfall if the crude prices crash further. It would be of interest to watch the tax mechanism if the government decides to keep the GST, as it is, under such differing scenarios.



## Endnote

The difference between crude oil prices and gasoline is because of in-between stages of processing. Added to it are multiple pricing components. With the exception of LPG and kerosene, all other petroleum products prices in India are linked to crude oil pricing in the international markets. Moreover, the relatively higher pricing of petrol in India, despite subsidies, is due to its various components of tax structure. In any case, cross-subsidisation is not a pro-poor strategy as the benefits largely accrue to better off sections of the society. 🇮🇳

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